

Patent Application No. 10/734,673
Docket No. NE204-USDIV
TAK.031DIV

2

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AMENDMENTS TO THE CLAIMS

Please cancel claim 3 without prejudice or disclaimer.

Please amend the claims as follows:

1. (Currently amended) A page information display method for displaying the electronic information using an information access device comprising a storage unit for storing the electronic information having plural pages of information in a unit of page of predetermined size, a display unit for displaying the electronic information stored in said storage unit in said unit of page, and an operation unit for inputting an operation to gain access to said page information, said operation unit being provided in the substantially same area as said display unit, comprising:

a page turning operation detecting step of outputting a page turning operation detecting signal when a dragging is made on said operation unit in parallel or anti-parallel to a predefined page turning direction at a current page read from said storage unit that is to be displayed at present;

a next display page setting step of setting a preceding page or a succeeding page immediately before or after the current page depending on a direction of said dragging operation to a next display page to be displayed at the next time, when the page turning operation detecting signal is output in said page turning operation detecting step; and

a page turning process step of displaying the next display page set in said next display page setting step in place of said current page on said display unit,

wherein said page turning operation detecting step comprises an operation rate calculating substep of calculating a page turning rate that is a speed of said page turning operation, and said page turning process step comprises a display rate setting substep of setting a display rate corresponding to the page turning rate calculated in said operation rate calculating step to change the display from the current page to the next display page.

2. (Original) The page information display method according to Claim 1, wherein said page turning operation detecting step further comprises a page turning operation judging substep of judging, as said page turning operation, an operation exceeding a minimum operation length in said page turning direction within a predefined allowance region in a direction orthogonal to said page turning direction.

Patent Application No. 10/734,673
Docket No. NE204-USDIV
TAK.031DIV

3

3. (Canceled)

4. (Currently amended) A page information display device having an electronic information memory for memorizing the electronic information having plural pages of information in a unit of page of predetermined size, a touch panel for displaying the electronic information stored in said electronic information memory in said unit of page, as well as inputting an operation to gain access to said page information, and a display controller for controlling the display of the page information stored in said electronic information memory on the basis of an operation content input into said touch panel,

wherein said display controller comprises:

a page turning operation detecting portion for outputting a page turning operation detecting signal when a dragging is made on said touch panel in parallel or anti-parallel to a predetermined page turning direction at a current page read from said electronic information memory that is to be displayed at present;

a next display page setting portion for setting a preceding page or a succeeding page immediately before or after the current page depending on a direction of said dragging operation to a next display page to be displayed at the next time, when the page turning operation detecting signal is output by said page turning operation detecting portion; and

a page turning process portion for displaying the next display page set in said next display page setting portion in place of said current page on said touch panel,

wherein said page turning operation detecting portion comprises an operation rate calculating portion for calculating a page turning rate that is a speed of said page turning operation, and said page turning process portion comprises a display rate setting portion for setting a display rate corresponding to the page turning rate calculated by said operation rate calculating portion to change the display from the current page to the next display page.

5. (Currently amended) A storage medium for storing a page information display program for displaying the electronic information, employing an information access device having an electronic information memory for memorizing the electronic information having plural pages of information in a unit of page of predetermined size, a touch panel for displaying the electronic information stored in said electronic information memory in said unit of page, as well as inputting an operation to gain access to said page information, and a display controller for controlling the display of the page information stored in said electronic

Patent Application No. 10/734,673 4
Docket No. NE204-USDIV
TAK.031DIV

information memory on the basis of an operation content input into said touch panel,
wherein said page information display program comprises, as the commands for
operating said display controller:

a page turning operation detecting command for outputting a page turning
operation detecting signal when a dragging is made on said touch panel in parallel or anti-
parallel to a predetermined page turning direction at a current page read from said electronic
information memory that is to be displayed at present;

a next display page setting command for setting a preceding page or a
succeeding page immediately before or after the current page depending on a direction of said
dragging operation to a next display page to be displayed at the next time, when the page
turning operation detecting signal is output; and

a page turning process command for displaying the next display page set in
accordance with said next display page setting command in place of said current page on said
touch panel,

wherein said page turning operation detecting command comprises an operation rate
calculating command for calculating a page turning rate that is a speed of said page turning
operation, and said page turning process command comprises a display rate setting command
for setting a display rate corresponding to the page turning rate calculated in said operation rate
calculating command to change the display from the current page to the next display page.

6. (Original) A page information display method for displaying the electronic
information, employing an information access device comprising a storage unit for storing the
electronic information having plural pages of information in a unit of page of predetermined
size, a display unit for displaying the electronic information stored in said storage unit in said
unit of page, and an operation unit for inputting an operation to gain access to said page
information, said operation unit being provided in the substantially same area as said display
unit, comprising:

a page holding operation detecting step of outputting a page holding operation
detecting signal when a predetermined page holding operation is made at a current page read
from said storage unit that is to be displayed at present;

a holding page number displaying step of displaying the total number of holding pages
in accordance with the amount of said page holding operation on said display unit, when the
page holding operation is initially detected in said page holding operation detecting step;

Patent Application No. 10/734,673 5
Docket No. NE204-USDIV
TAK.031DIV

a next display page setting step of setting a page having a page number that is equal to the current page added or subtracted by the amount of said holding operation to a next display page to be displayed at the next time, when the page holding operation detecting signal is output in said page holding operation detecting step; and

a page turning process step of displaying the next display page set in said next display page setting step in place of said current page on said display unit.

7. (Original) The page information display method according to Claim 6, wherein said page holding operation detecting step further comprises a pressure holding page number calculating substep of calculating said number of holding pages in accordance with the magnitude of a pressure applied to the substantially same position of said operation unit.

8. (Original) The page information display method according to Claim 6, wherein said page holding amount operation detecting step comprises a time holding page number calculating substep of calculating said number of holding pages in accordance with the elapsed time of a depressing operation that continues at the substantially same position of said operation unit.

9. (Original) The page information display method according to Claim 7, wherein said holding page number displaying step comprises a substep of displaying a holding display circle defined with a radius of the size corresponding to said page holding amount on said display unit.

10. (Original) The page information display method according to Claim 7, wherein said holding page number displaying step comprises a substep of displaying a multiloop consisting of a number of circles around the same center and corresponding to said page holding amount.

11. (Original) The page information display method according to Claim 7, wherein said holding page number displaying step comprises a substep of displaying a coated circle defined with a radius of predetermined size, said circle being coated corresponding to said page holding amount.

Patent Application No. 10/734,673
Docket No. NE204-USDIV
TAK.031DIV

6

12. (Original) A page information display device having an electronic information memory for memorizing the electronic information having plural pages of information in a unit of page of predetermined size, a touch panel for displaying the electronic information stored in said electronic information memory in said unit of page, as well as inputting an operation to gain access to said page information, and a display controller for controlling the display of the page information stored in said electronic information memory on the basis of an operation content input into said touch panel,

wherein said display controller comprises:

- a page holding operation detecting portion for outputting a page holding operation detecting signal when a predetermined page holding operation is performed at a current page read from said electronic information memory that is to be displayed at present;
- a holding page number display unit for displaying the total number of holding pages in accordance with the operation amount of said page holding operation on said display unit, when the page holding operation is initially detected by said page holding operation detecting portion;
- a next display page setting portion for setting a page having a page number that is equal to the current page added or subtracted by said amount of holding operation to a next display page to be displayed at the next time, when the page holding operation detecting signal is output from said page holding operation detecting portion; and
- a page turning process portion for displaying the next display page set in said next display page setting portion in place of said current page on said touch panel.

13. (Original) A storage medium for storing a page information display program for displaying the electronic information, employing an information access device having an electronic information memory for memorizing the electronic information having plural pages of information in a unit of page of predetermined size, a touch panel for displaying the electronic information stored in said electronic information memory in said unit of page, as well as inputting an operation to gain access to said page information, and a display controller for controlling the display of the page information stored in said electronic information memory on the basis of an operation content input into said touch panel,

wherein said page information display program comprises, as the commands for operating said display controller:

- a page holding operation detecting command for outputting a page holding

Patent Application No. 10/734,673
Docket No. NE204-USDIV
TAK.031DIV

7

operation detecting signal when a predetermined page holding operation is performed at a current page read from said electronic information memory that is to be displayed at present;

a holding page number display command for displaying the total number of holding pages in accordance with the operation amount of said page holding operation on said display unit, when the page holding operation is initially detected upon said page holding operation detecting command;

a next display page setting command for setting a page having a page number that is equal to the current page added or subtracted by said amount of holding operation to a next display page to be displayed at the next time, when said page holding operation detecting signal is output in accordance with said page holding operation detecting command; and

a page turning process command for displaying the next display page set in accordance with said next display page setting command in place of said current page on said touch panel.

14.-22. (Canceled)

23. (Currently amended) A page information display method for displaying the electronic information, employing an information access device having a storage unit for storing the electronic information having plural pages of information in a unit of page of predetermined size, a display unit for displaying the electronic information stored in said storage unit in said unit of page, and an operation unit for inputting an operation to gain access to said page information, said operation unit being provided in the substantially same area as said display unit, wherein said display unit has an information access area for displaying the electronic information stored in said storage unit in said unit of page, and one and the other tag display areas for displaying a tag indicating the content of said page, said tag display areas being provided at both ends of said information access area, comprising:

a page holding operation detecting step of outputting a page holding operation detecting signal, when a predetermined page holding operation is performed at a current page read from said storage unit that is to be displayed at present;

a next display page setting step of setting a page having a page number that is equal to the current page added or subtracted by said amount of holding operation to a next display page to be displayed at the next time, when the page holding operation detecting signal is output in said page holding operation detecting step; and

Patent Application No. 10/734,673
Docket No. NE204-USDIV
TAK.031DIV

8

a page turning process step of displaying the next display page set in said next display page setting step in place of said current page on said display unit; and [[,]]

following said page holding operation detecting step, further comprising a before-turning holding object page tag coloring step of coloring a tag for a holding object page that is held by said page holding operation with a different color from other tags in one tag display area that is displaying a tag appended to the current page, when the page holding operation is initially detected in said page holding operation detecting step.

24. (Original) The page information display method according to Claim 23, further comprising, following said page turning process step, an after-turning holding object page tag coloring step of coloring a page tag for said holding object page, for which said page turning process is completed, in the other tag display area where a tag appended to a current page that has become the new current page after the page turning process is not displayed, with a different color from other tags.

25. (Original) A page information display method for displaying the electronic information, employing an information access device having a storage unit for storing the electronic information having plural pages of information in a unit of page of predetermined size, a display unit for displaying the electronic information stored in said storage unit in said unit of page, and an operation unit for inputting an operation to gain access to said page information, said operation unit being provided in the substantially same area as said display unit,

wherein said display unit has an information access area for displaying the electronic information stored in said storage unit in said unit of page, a succeeding page tag display area for displaying a tag appended to a current page read from said storage unit that is to be displayed at present and the succeeding page tags appended to the pages succeeding said current page, and a preceding page tag display area for displaying the preceding page tags appended to the pages preceding said current page, comprising:

a current page tag height calculating step of calculating a display height of the current page tag on the basis of the position of said current page with respect to the total number of pages for the electronic information stored in said storage unit;

Patent Application No. 10/734,673
Docket No. NE204-USDIV
TAK.031DIV

9

a succeeding page tag display format designating step of designating a display format of said succeeding page tags on the basis of the tag height of the current page tag calculated in said current page tag height calculating step and the total number of succeeding pages; and

a preceding page tag display format designating step of designating a display format of said preceding page tags on the basis of the tag height of said current page tag and the total number of preceding pages before or after said succeeding page tag display format designating step,

the method further comprising:

a page holding operation detecting step of outputting a page holding operation detecting signal, when a predetermined page holding operation is performed at the current page;

a next display page setting step of setting a page having a page number that is equal to the current page added or subtracted by said amount of holding operation to a next display page to be displayed at the next time, when the page holding operation detecting signal is output in said page holding operation detecting step; and

a page turning process step of displaying the next display page set in said next display page setting step in place of said current page on said display unit, said page turning process step further comprising a holding object page tag display substep of displaying the tags appended to the current page that is an object of said turning process and the holding object pages held in said holding operation in a display format in accordance with a direction of the page turning process among those designated in said preceding page tag display format designating step or said succeeding page tag display format designating step within said information access area, following the transformation or movement of the current page in said current page turning process.

26. (Original) The page information display method according to Claim 25, further comprising, following said page holding operation detecting step:

a before-turning holding object page tag coloring step of coloring a tag for a holding object page that is held by said page holding operation with a different color from other tags in one tag display area that is displaying a tag appended to the current page, when the page holding operation is initially detected in said page holding operation detecting step; and

an after-turning holding object page tag coloring step for coloring a page tag for said holding object page, for which said page turning process is completed, in the other tag display

Patent Application No. 10/734,673 10
Docket No. NE204-USDIV
TAK.031DIV

area where a tag appended to a current page that has become the new current page after the page turning process is not displayed, with a different color from other tags, following said page turning process step.

27. (Original) The page information display method according to Claim 25, wherein said holding object page tag display control step further comprises a substep of setting the tags appended to the current page that becomes the turning process object and the holding object pages held in said holding operation in a display format of equal and close interval between tags.

28. (Original) A page information display method for displaying the electronic information, employing an information access device having a storage unit for storing the electronic information having plural pages of information in a unit of page of predetermined size, a display unit for displaying the electronic information stored in said storage unit in said unit of page, and an operation unit for inputting an operation to gain access to said page information, said operation unit being provided in the substantially same area as said display unit, wherein said display unit has an information access area for displaying the electronic information stored in said storage unit in said unit of page, and one and the other tag display areas for displaying a tag indicating the content of said page, the tag display areas being provided at both ends of said information access area, comprising:

a page holding operation detecting step of outputting a page holding operation detecting signal, when a page holding operation is performed for the tags displayed in said one or the other tag display area;

a next display page setting step of setting a page having a page number that is equal to the current page added or subtracted by said amount of holding operation to a next display page to be displayed at the next time, when the page holding operation detecting signal is output in said page holding operation detecting step; and

a page turning process step of displaying the next display page set in said next display page setting step in place of said current page on said display unit,

the method further comprising:

following said page holding operation detecting step, a tag holding circle display step of displaying a circle corresponding to the number of holding object pages in said page holding operation over a tag for which said page holding operation is detected, when the page

Patent Application No. 10/734,673
Docket No. NE204-USDIV
TAK.031DIV

11

holding operation is initially detected in said page holding operation detecting step.

29. (Original) A page information display method for displaying the electronic information, employing an information access device having a storage unit for storing the electronic information having plural pages of information in a unit of page of predetermined size, a display unit for displaying the electronic information stored in said storage unit in said unit of page, and an operation unit for inputting an operation to gain access to said page information, said operation unit being provided in the substantially same area as said display unit, comprising,

an article information enlarging operation detecting step of outputting an article information enlarging operation detecting signal having the positional information as to an article information enlarging operation, when the article information enlarging operation is detected on said operation unit, in the case where plural articles of information making up a current page are defined in said current page read from said storage unit that is to be displayed at present; and

an article information enlarging display step of displaying in enlargement the article information at a position indicated by said positional information on said display unit, in the case where the article information enlarging operation detecting signal is output in said article information enlarging operation detecting step.

30. (Original) The page information display method according to Claim 29, wherein said article information enlarging operation detecting step further comprises a substep of outputting an article information enlarging operation detecting signal including a click position as said positional information, when a click is made on said operation unit.

31. (Original) The page information display method according to Claim 29, wherein said article information enlarging operation detecting step further comprises an article information continuous enlarging operation detecting substep of outputting an article information continuous enlarging operation detecting signal in the case where two or more articles of information is contained in a locus of dragging, when a dragging is made on said operation unit, and said article information enlarging display step comprises a continuous enlarging display substep of displaying in enlargement said article information individually in

Patent Application No. 10/734,673
Docket No. NE204-USDIV
TAK.031DIV

12

time series at every predetermined time interval in the order of said dragging, in the case wherein said article information continuous enlarging operation detecting signal is output.

32. (Original) The page information display method according to Claim 31, wherein said continuous enlarging display step further comprises a substep of displaying in enlargement said two or more articles of information in time series continuously at a time interval in accordance with a rate of said dragging.

33. (Original) The page information display method according to Claim 29, further comprising, following said article information enlarging display step: an article display page turning inhibit control step of inhibiting a normal page turning operation while said article information is being displayed in enlargement.

34. (Original) A page information display method for displaying the electronic information, employing an information access device having a storage unit for storing the electronic information having plural pages of information in a unit of page of predetermined size, a display unit for displaying the electronic information stored in said storage unit in said unit of page, and an operation unit for inputting an operation to gain access to said page information, said operation unit being provided in the substantially same area as said display unit, comprising:

an article information enlarging operation detecting step of outputting an article information enlarging operation detecting signal having the positional information as to an article information enlarging operation, when the article information enlarging operation is detected on said operation unit, in the case where plural articles of information making up a current page are defined at said current page read from said storage unit that is to be displayed at present; and

an article information enlarging display step of displaying in enlargement the article information at a position indicated by said positional information on said display unit, in the case where an article information enlarging operation detecting signal is output in said article information enlarging operation detecting step, said article information enlarging display step further comprising an enlarging time wire frame display substep of enabling a wire frame, with a start region at an outside periphery of said article information to be enlarged, to be displayed at multiple stages of varying sizes up to an outside periphery of said display unit.

Patent Application No. 10/734,673 13
Docket No. NE204-USDIV
TAK.031DIV

35. (Original) The page information display method according to Claim 34, further comprising, following said article information enlarging display step, a reducing time wire frame display step of enabling a wire frame, with a start region at an outside periphery of said display unit, to be displayed at multiple stages of varying sizes up to an outside peripheral position of the article information at said current page, when an enlargement completing operation for completing the enlargement of said article information is performed.

36. (Original) The page information display method according to Claim 34, wherein said article information enlarging display step further comprises an enlarged tag appending step of enlarging a tag as well as appending said enlarged tag to said enlarged article information, in the case where said current page has the tag.

37. (Original) The page information display method according to Claim 34, wherein said article information enlarging display step further comprises a substep of embossing an article chosen from said current page.

38. (Currently amended) A page information display device, comprising: having
an electronic information memory for memorizing the electronic information having plural pages of information in a unit of page of predetermined size; [[,]]

a touch panel for displaying the electronic information stored in said electronic information memory in said unit of page, as well as inputting an operation to gain access to said page information; [[,]] and

a display controller for controlling the display of the page information stored in said electronic information memory on the basis of an operation content input into said touch panel, said display controller comprising an event driven display control portion for enabling the pages displayed on said touch panel to be changed on the basis of the time and locus from a pointer down to up on said touch panel, said event driven display control portion comprising a page selection function for each locus direction for selecting a page having a smaller page number or a larger page number than that of a page being displayed at present on the basis of the locus of pointer from said pointer down to up.

Patent Application No. 10/734,673
Docket No. NE204-USDIV
TAK.031DIV

14

39. (Original) The page information display device according to Claim 38, wherein said electronic information memory has the article information making up each page of said electronic information, and said event driven display control portion has an article continuous display function of continuously displaying in enlargement the article information overlapped on a path of the locus on the basis of said path of the locus.

40. (Currently amended) A page information display device, comprising: having an electronic information memory for memorizing the electronic information having plural pages of information in a unit of page of predetermined size; [[.]]

a touch panel for displaying the electronic information stored in said electronic information memory in said unit of page, as well as inputting an operation to gain access to said page information; [[.]] and

a display controller for controlling the display of the page information stored in said electronic information memory on the basis of an operation content input into said touch panel, [[:]] said display controller comprising:

a cache memory for memorizing temporarily the page information that is judged to be displayed on said touch panel among the electronic information stored in said electronic information memory,

a continuous page prefetch control portion for storing in advance the page information having a page number following the page number of the current page being displayed at present on said touch panel in said cache memory, and

a page turning process control portion for effecting a page turning process by selecting one or more pages in accordance with an operation on said touch panel, wherein said continuous page prefetch control portion has a pages turning time deleting function of deleting the page data in plural pages from said cache memory, in the case where a page turning operation of plural pages is detected by said page turning process control portion.

41. (Original) The page information display device according to Claim 40, wherein said display controller comprises an article information prefetch control portion for storing the article information within said current page in said cache memory in the case where the article information is contained in said current page.

42. (Currently amended) A page information display device, comprising:

Patent Application No. 10/734,673
Docket No. NE204-USDIV
TAK.031DIV

15

reception means for receiving the ML data described in a mark-up language via a communication line from a server;

ML data conversion means for converting the ML data received by said reception means into the image data in a unit of page of predetermined size;

an electronic information memory for memorizing the page information that is the image data converted by said ML data conversion means;

a touch panel for displaying the page information stored in said electronic information memory as well as inputting an operation to gain access to said page information; and

a display controller for controlling the display of the page information stored in said electronic information memory on the basis of an operation content input into said touch panel,

wherein said ML data conversion means comprises a page number appending portion for converting a link structure of said ML data into one dimensional book structure as well as appending sequentially the page number to the page information after conversion, and

wherein said display controller comprises:

an event driven display control portion for selecting the page information of a page having a smaller page number or a larger page number than that of a page being displayed at present on said touch panel as a next page to be displayed at the next time on the basis of a locus from the pointer down to up on said touch panel.

43. (Original) The page information display device according to Claim 42, wherein said ML data conversion means comprises a tree structure converting portion for designating a single tree structure from the link structure of said ML data as well as converting said tree into a one-dimensional book structure by searching said tree in a predetermined search order.

44. (Original) The page information display device according to Claim 43, wherein said tree structure converting portion searches the link structure of said ML data giving priority to the depth.

45. (Original) The page information display device according to Claim 42, wherein said display controller comprises a tag appending portion for appending a tag indicating a page number of said page information to both end portions of said touch panel, said tag appending portion having a converted page tag display function of displaying the tag for the

Patent Application No. 10/734,673
Docket No. NE204-USDIV
TAK.031DIV

16

page having the page number appended by said page number appending portion on said touch panel.

46. (Original) A page information display device, comprising:
reception means for receiving the page information from a server;
an electronic information memory for memorizing the page information being received by said reception means;
a touch panel for displaying the page information stored in said electronic information memory as well as inputting an operation to gain access to said page information; and
a display controller for controlling the display of the page information stored in said electronic information memory on the basis of an operation content input into said touch panel,
wherein said display controller comprises:
a tag appending portion for displaying a tag indicating the content of the page information stored in said electronic information memory on said touch panel; and
a streaming time dynamic tag appending control portion for operating said tag appending portion as the page information is being received by said reception means.

47. (Original) A page information display device, comprising:
reception means for receiving the page information having a predetermined total number of pages from a server;
an electronic information memory for memorizing the page information being received by said reception means;
a touch panel for displaying the page information stored in said electronic information memory as well as inputting an operation to gain access to said page information; and
a display controller for controlling the display of the page information stored in said electronic information memory on the basis of an operation content input into said touch panel,
wherein said display controller comprises:
a tag appending portion for displaying the tags indicating the contents of the page information stored in said electronic information memory on said touch panel, the number of said tags corresponding to said total number of pages; and
a streaming time dynamic tag coloring control portion for coloring a tag which

Patent Application No. 10/734,673
Docket No. NE204-USDIV
TAK.031DIV

17

has been received with a different color from the tags which have not been received, as the page information is being received by said reception means.

48. (Currently amended) A page information display device comprising:
reception means for receiving the page information from a server;
an electronic information memory for memorizing the page information being received by said reception means;
a touch panel for displaying the page information stored in said electronic information memory as well as inputting an operation to gain access to said page information; and
a display controller for controlling the display of the page information stored in said electronic information memory on the basis of an operation content input into said touch panel,
wherein said display controller comprises:
a tag appending portion for displaying a tag indicating the content of the page information stored in said electronic information memory on said touch panel; and
a streaming time dynamic tag length control portion for enabling said tag appending portion to create a tag having a length corresponding to the amount of information already received in one page of the page information as the page information is being received by said reception means.

49. (Previously presented) A page information display method, in a page information display method for displaying a page of predetermined size as a unit and, with a tag, electronic information having a plurality of information as a unit of page, comprising:
calculating a tag length which determines a length of a current page tag appending to a current page by referring to the tag length as a reference;
setting a semantic display which sets each of the length of the tag to be shorter at a lower hierarchical level, with the tag length of the current page tag as a maximum value;
setting a line tag display for a certain range when a length of a tag display area is insufficient for the total page number;
semantically displaying the tag length to be shorter at said lower hierarchical level;
displaying a tag content according to a tag length and a font size for display; and
displaying page information of a current page to be displayed in an information access area.

Patent Application No. 10/734,673
Docket No. NE204-USDIV
TAK.031DIV

18

50. (Previously presented) A page information display method, as claimed in claim 49, wherein the method comprises, after setting the semantic display, inserting an interval display line which changes a thickness of a tag contour line at every page interval, depending on a content of page information.

51. (Previously presented) A page information display method, as claimed in claim 49, wherein the displaying of said tag content includes displaying a page number on a tag capable of being displayed.